

**Montana Board of Oil and Gas Conservation
Environmental Assessment**

Operator: Whiting Oil and Gas Corporation
Well Name/Number: Kilen 21-15-1H
Location: NE NW Section 15 T25N R57E
County: Richland, **MT;** **Field (or Wildcat)** W/C (Bakken Horizontal)

Air Quality

(possible concerns)

Long drilling time: No, 30 to 40 days drilling time.

Unusually deep drilling (high horsepower rig): No, triple derrick drilling rig to drill a single lateral Bakken Formation horizontal well test to 20,593'MD/10,560'TVD.

Possible H2S gas production: H2S gas production possibility is slight (Mississippian Formations).

In/near Class I air quality area: No Class I air quality area in the area of review.

Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under rule 75-2-211.

Mitigation:

- ☒ Air quality permit (AQB review)
- ☐ Gas plants/pipelines available for sour gas
- ☐ Special equipment/procedures requirements
- ☐ Other: _____

Comments: No special concerns – using triple derrick drilling rig to drill a single lateral Bakken Formation horizontal well test to 20,593'MD/10,560'TVD. If existing pipeline for gas in the area, associated gas can be gathered or if no gathering system nearby, associated gas can be flared under Board Rule 36.22.1220.

Water Quality

(possible concerns)

Salt/oil based mud: Yes, oil based invert (70/30) drilling fluids will be used on the mainhole. The horizontal lateral will be drilled with brine water. The surface hole will be drilled with freshwater and freshwater drilling fluids.

High water table: No, no high water table anticipated in the area of review.

Surface drainage leads to live water: Yes live water, stock pond exist in the North Fork First Hay Creek, nearest drainage is an unnamed ephemeral tributary drainage to the North Fork First Hay Creek, about 1/16 of a mile to the northeast from this location.

Water well contamination: None, closest water wells are about 1/4 of a mile to the northeast, about 5/8 of a mile to the northeast, about 5/8 of a mile to the southwest and 3/4 of a mile to the northeast from this location. All other water wells are further than 1 mile from this location in any direction. Depth of this stock and domestic water wells range from 40' to 380'. Surface casing hole will be drilled with freshwater and freshwater drilling fluids. Surface casing will be run and cemented to surface from 2000'.

Porous/permeable soils: No, sandy clay soils.

Class I stream drainage: No Class I stream drainages in the area of review.

Mitigation:

- ☒ Lined reserve pit
- ☒ Adequate surface casing
- ☐ Berms/dykes, re-routed drainage

☒ Closed mud system
☒ Off-site disposal of solids/liquids (in approved facility)
___ Other: _____
Comments: 2000' of surface casing cemented to surface adequate to protect freshwater zones and to cover the base of the Fox Hills Formation.

Soils/Vegetation/Land Use

(possible concerns)

Stream crossings: No, stream crossings anticipated, crossing only ephemeral drainages into this location.

High erosion potential: Yes possible high erosion potential on cut and fill slopes, moderate cut, up to 11.7' and Moderate fill, up to 11.9', required.

Loss of soil productivity: None, location to be restored after drilling well, if well is nonproductive. If productive unused portion of drillsite will be reclaimed.

Unusually large wellsite: No, a very large wellsite 420'X425' location size designed to accommodate 4 wells from this well pad, Kilen 21-15-1H, Kilen 21-15-2H, Kilen 21-15-3H and Kilen 21-15-4H.

Damage to improvements: Slight surface use is cultivated land.

Conflict with existing land use/values: Slight

Mitigation

- ___ Avoid improvements (topographic tolerance)
- ___ Exception location requested
- ☒ Stockpile topsoil
- ___ Stream Crossing Permit (other agency review)
- ☒ Reclaim unused part of wellsite if productive
- ___ Special construction methods to enhance reclamation
- ___ Other _____

Comments: Access to location will be over existing state highway #16 and existing county road, #340. An access of 4413' will be built off the county road into this location. Oil based invert drilling fluids will be recycled. Completion fluids will be hauled to an authorized Class II Disposal. Drilling cuttings and mud solids will be fly ashed in the lined cuttings pit and buried in the lined cuttings pit with a minimum of 4' of subsoil cover over the top of the cuttings. No special concerns.

Health Hazards/Noise

(possible concerns)

Proximity to public facilities/residences: Nearest residences are about 5/8 of a mile to the southwest, about 3/4 of a mile south, southeast and east southeast from the location. Town Hall is about 1 mile to the northeast from this location. The town of Fairveiw, Montana is about 16 miles to the southeast. The town of Culbertson, Montana is about 18 miles to the northwest. The town of Sidney, Montana is about 16.5 miles to the southeast.

Possibility of H₂S: H₂S potential is slight (Mississippian Formations).

Size of rig/length of drilling time: Triple drilling rig/short 30 to 40 days drilling time.

Mitigation:

- ☒ Proper BOP equipment
- ___ Topographic sound barriers
- ___ H₂S contingency and/or evacuation plan

☐ Special equipment/procedures requirements

☐ Other: _____

Comments: Adequate surface casing and operational BOP should mitigate any problems. No concerns.

Wildlife/recreation

(possible concerns)

Proximity to sensitive wildlife areas (DFWP identified): None identified.

Proximity to recreation sites: None identified.

Creation of new access to wildlife habitat: None

Conflict with game range/refuge management: None

Threatened or endangered Species: Species identified as threatened or endangered are the Pallid Sturgeon, Interior Lease Tern, Whooping Crane and Piping Plover.

Candidate species are the Greater Sage Grouse and the Sprague's Pipit. MTFWP Natural Heritage Tracker website lists one (1) species of concern. It is the Whooping Crane.

Mitigation:

☐ Avoidance (topographic tolerance/exception)

☐ Other agency review (DFWP, federal agencies, DSL)

☐ Screening/fencing of pits, drillsite

☐ Other: _____

Comments: The surface ownership is private cultivated land. There may be species of concern that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to what he would like done, if a species of concern is discovered at this location. The Board of Oil & Gas has no jurisdiction over private surface lands.

Historical/Cultural/Paleontological

(possible concerns)

Proximity to known sites None identified.

Mitigation

☐ avoidance (topographic tolerance, location exception)

☐ other agency review (SHPO, DSL, federal agencies)

☐ Other: _____

Comments: On private cultivated surface land. There may be possible historical/cultural/paleontological sites that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to his desire to preserve these sites or not, if they are found during construction of the wellsite. The Board of Oil & Gas has no jurisdiction over private surface lands.

Social/Economic

(possible concerns)

☐ Substantial effect on tax base

☐ Create demand for new governmental services

☐ Population increase or relocation

Comments: No concerns.

Remarks or Special Concerns for this site

A single lateral Bakken Formation horizontal well test to 20,593'MD/10,560'TVD. No concerns.

Summary: Evaluation of Impacts and Cumulative effects

No significant long term impacts expected, some short term impacts will occur.

I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

Prepared by (BOGC): \s\ Steven Sasaki
(title:) Chief Field Inspector
Date: May 31, 2012

Other Persons Contacted:

Montana Bureau of Mines and Geology, GWIC website
(Name and Agency)
Water wells in Richland County
(subject discussed)
May 31, 2012
(date)

US Fish and Wildlife, Region 6 website
(Name and Agency)
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES
MONTANA COUNTIES, Richland County
(subject discussed)

May 31, 2012
(date)

Montana Natural Heritage Program Website (FWP)
(Name and Agency)
Heritage State Rank= S1, S2, S3, T25N R57E
(subject discussed)

May 31, 2012
(date)

If location was inspected before permit approval:

Inspection date: _____

Inspector: _____

Others present during inspection: _____